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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,971	03/16/2001	Sheng Huang	10984.3US11	7444

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MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER

SIMITOSKI, MICHAEL J

ART UNIT	PAPER NUMBER
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2134

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,971

Applicant(s)

HUANG ET AL.

Examiner

Michael J Simitoski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☒ Claim(s) 1, 16 and 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/16/01, 6/29/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: IDS (PTO-1449) of 8/13/02.

DETAILED ACTION

1. The IDS of 5/16/01, 7/3/01 & 8/13/02 have been received and considered.
2. Claims 1-45 are pending.

Specification

3. The disclosure is objected to because of the following informalities:

On page 2, ¶4, “similar these” should be replaced with “similar to these”,

On page 21, ¶3, “proctects” should be replaced with “protects”, and

On page 22, ¶2, “ardival” should be replaced with “archival”.

Appropriate correction is required.

Claim Objections

4. Claims 1, 16 & 38 are objected to because of the following informalities:

Regarding claim 1, “patterns” (line 4) should be replaced with “pattern”,

Regarding claims 16 & 38, “different to” (line 2) should be replaced with
“different from”,

Regarding claims 16 & 38, “superposed” (line 4) should be replaced with
“superimposed”.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 23-45 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 23 is directed to a data structure having no relation to physical media.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 15 & 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims recite the limitation "of sufficient difference", but this difference is not clearly defined in the specification.

For the purposes of this Office Action, "sufficient difference" will be understood to mean that the watermarks can be verified/accessed after superimposition.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 8, 17-18, 30, 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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11. Regarding claims 15 & 37, the term "sufficient" is a relative term which renders the claim indefinite. The term "sufficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. *For the purposes of this Office Action, "sufficient difference" will be understood to mean that the watermarks can be verified/accessed after superimposition.*

12. Claims 17-18 & 38-40 are unclear because "counterfeit-proof" is a relative term in cryptography, as all cryptographic/watermark methods can in theory be broken given enough time and computing resources. *For the purposes of this Office Action, counterfeit-proof will be understood to mean a watermark layer whose purpose is to deter counterfeiting.*

13. Claim 8 recites the limitation "the application" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

14. Claim 30 recites the limitation "the application" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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16. Claims 1-4, 6-11, 13-16, 20-26, 28-33, 35-38 & 43-45 are rejected under 35

U.S.C. 102(e) as being anticipated by U.S. Patent 6,104,812 to Koltai et al. (Koltai).

Regarding claims 1-3, 7, 23-25 & 29, Koltai discloses determining a required plural number of watermark layers (Fig. 15) and a dot patterns/secondary images for each of the plurality of watermark layers, selecting at least one latent image object/secondary images for each of the plural of watermark layers (col. 4, lines 11-16) and embedding each latent image object/secondary images into its respective watermark layer (col. 4, lines 11-16), superposing the watermark layers to form the watermark/overall secondary image (col. 4, lines 40-44), defining and generating a decoder for each of the number of watermark layers (col. 4, lines 11-16) and applying the watermark to the document/primary image (col. 4, lines 11-16).

Regarding claims 4 & 26, Koltai discloses the dot pattern/secondary image being a linear coordinate mapping of a basic two-dimensional dot array (1:1) (Fig. 15).

Regarding claims 6 & 28, Koltai discloses a random dot array (co. 8, lines 21-23).

Regarding claims 8-9 & 30-31, Koltai discloses the latent image objects containing information that is critical to the application (col. 11, lines 45-49).

Regarding claims 10-11 & 32-33, Koltai discloses phase modulation (Fig. 10).

Regarding claims 13 & 35, Koltai discloses a decoder for each watermark layer (Fig. 15) that has a decoder structure related to a dot pattern structure of a carrier dot pattern of the relevant watermark layer (Figs. 19A-19J) and in the direction where the latent image object is embedded (col. 16, lines 1-12).

Regarding claims 14 & 36, Koltai discloses a conjunct/90 degree relationship (col. 16, lines 1-12).

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Regarding claims 15 & 37, Koltai does not specifically disclose sufficient difference, however, as the watermark layers/secondary images are superimposed on the primary image to be later verified, it is inherent that the secondary images are of sufficient difference to avoid interference.

Regarding claims 16 & 38, Koltai discloses a difference between layers to avoid interference (col. 14, lines 47-51).

Regarding claims 20-22 & 43-45, Koltai discloses the watermarks being embedded into the various color channels (col. 14, line 46 – col. 15, line 10 & Fig. 15).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 5 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claims 2 & 26 above, in view of U.S. Patent 4,828,644 to Ochoa et al. (Ochoa). Koltai discloses performing rotations (col. 4, lines 12-25), but lacks the dot pattern including a non-linear coordinate mapping of a basic two-dimensional dot array. However, Ochoa teaches that rotations are linear operations in polar coordinate space (col. 1, lines 23-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a non-linear coordinate mapping (polar) of a basic two-dimensional dot array. One of

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ordinary skill in the art would have been motivated to perform such a modification to perform linear operations resulting in a rotation, as taught by Ochoa (col. 1, lines 23-46).

19. Claims 12 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claims 11 & 33 above, in view of U.S. Patent 6,636,616 to Harrington. Koltai lacks smoothing to avoid abrupt changes. However, Harrington teaches that $W(x, y)$ (the watermarking function) should smoothly transition from one value to another (in this case from -1 to +1) to avoid abrupt visible transitions in the image (col. 5, lines 44-53). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a post-processing smoothing step. One of ordinary skill in the art would have been motivated to perform such a modification to avoid abrupt visible transitions in the image, as taught by Harrington (col. 5, lines 44-53).

20. Claims 17 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claims 13 & 35 above, in view of U.S. Patent 6,345,104 to Rhoads. Koltai discloses a counterfeit-proof layer (col. 15, lines 28-33), but lacks the decoder being a photocopier. However, Rhoads teaches that by including watermark verification features (decoder) into a photocopier, the copier can take action if reproduction of a security document is attempted (col. 3, lines 1-26). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the decoder in a photocopier. One of ordinary skill in the art would have been motivated to perform such a modification to take action if reproduction of a security document is attempted, as taught by Rhoads (col. 3, lines 1-26).

21. Claims 18 & 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai in view of Rhoads, as applied to claims 17 & 39 above, in view of U.S. Patent 5,767,889 to Ackley.

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Koltai, as modified above, lacks a post-processing step to remove dots that are too close to adjacent dots in a non-object area. However, Ackley teaches that it is useful to eliminate dots on bar code printer to ensure that the bars do not bleed into each other under certain printing conditions (col. 5, lines 43-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to remove dots that are too close to adjacent dots. One of ordinary skill in the art would have been motivated to perform such a modification so the dots do not bleed into each other during printing, as taught by Ackley (col. 5, lines 43-67).

22. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claim 1 above, in view of U.S. Patent 5,659,613 to Copeland et al. (Copeland). Koltai discloses generating the watermark (Fig. 13), controlling the printing process to protect the document and the watermark from attack (col. 4, lines 35-40) and generating a decoder device to enable verification of the authenticity of the document (col. 8, lines 8-32 & col. 11, lines 26-34, col. 15, lines 28-34). Koltai lacks verifying the authenticity and copyright of the document before printing. However, Copeland teaches that to ensure legitimate use of a product, such as a DVD, the system searches for an authentication signature/watermark and will not play the disk if it isn't found (col. 1, lines 48-50 & col. 2, lines 35-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to verify the authenticity and copyright of the document before printing. One of ordinary skill in the art would have been motivated to perform such a modification to ensure legitimate use of the printed matter, as taught by Copeland (col. 1, lines 48-50 & col. 2, lines 35-56).

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23. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koltai, as applied to claim 23 above, in view of "If One Watermark is Good, Are More Better?" by Mintzer et al. (Mintzer).

Regarding claim 41, Koltai discloses that the watermark being included in a document for protection (col. 15, lines 27-34), but not for authentication. However, Mintzer teaches that watermarks are often used to determine if an image has been altered (§1.2 ¶2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to also include information about the document, so as to provide authentication. One of ordinary skill in the art would have been motivated to perform such a modification to verify the content of the object, as taught by Mintzer (§1.2 ¶2).

Regarding claim 42, Koltai discloses watermarking a word (col. 15, lines 27-34).

Conclusion

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Simitoski whose telephone number is (703) 305-8191. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 4:15 p.m.. The examiner can also be reached on alternate Fridays from 6:45 a.m. - 3:15 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Morse can be reached at (703) 308-4789.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, DC 20231

Or faxed to:

(703)746-7239 (for formal communications intended for entry)

Or:

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(703)746-7240 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA 22202, Fourth Floor (Receptionist).

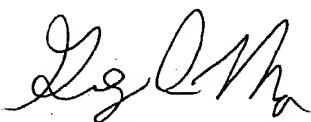
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9000.

NOTE: After October 19, 2004, Michael Simitoski can be reached at (571) 272-3841, Greg Morse can be reached at (571) 272-3838 and general inquiries can be directed to (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MJS
September 21, 2004



GREGORY MORSE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100